

Abstract

For minimizing the span error of a pressure sensor having an essentially cylindrical platform and a measuring membrane joined to an end face of the platform, with the pressure measuring cell being axially clamped between an elastic sealing ring, which bears against the membrane-bearing end face of the pressure measuring cell, and a support ring, which bears against the rear face of the pressure measuring cell, the dimensions of the support ring are coordinated with the dimensions of the sealing ring and pressure measuring cell such that a radial deformation of the membrane-bearing end face caused by the axial clamping of the pressure measuring cell is sufficiently small that the span error of the pressure sensor arising from a reduction of the axial clamping force by at least 10% amounts to not more than about 0.02%. Additionally, arranged between the support ring and a clamping ring is a stiff decoupling element, which minimizes the temperature hysteresis of the span. The geometry of the support ring and the decoupling element is determined iteratively by means of FEM.

Fig. 1